

Project Baseline Summary Report

Data Source: **EM CDB**

Operations/Field Office: **Richland**

Site Summary Level: **Hanford Site**

Project **RL-TP08 / 324/327 Facility Transition Project**

Report Number: **GEN-01b**

Print Date: **3/9/2000**

HQ ID: **0408**

General Project Information

Project Description Narratives

Purpose, Scope, and Technical Approach:

Purpose: 324/327 Project Technical Baseline (RL-TP08)

The purpose of the 324/327 Buildings Stabilization/Deactivation Project is to establish a passively safe and environmentally secure configuration of the 324 and 327 Buildings at the Hanford Site, and to preserve that configuration for 10 years (deactivation planning basis only). The 10-year horizon will be used to predict future maintenance requirements and represents the typical time span needed to define, authorize, and initiate the follow-on decontamination and decommissioning (D&D) activities. Actual documentation may vary.

The project removes, reduces, and/or stabilizes the radioactive and the nonradioactive hazardous materials within the 324 and 327 Facilities. Completing these activities reduces hazards to workers and the public and allows for a reduced level of surveillance during the extended surveillance period following deactivation. Worker health and safety is a primary goal of stabilization and deactivation. A Voluntary Protection Program is being implemented. Deactivation places the plant in a condition that no longer requires high levels of surveillance and maintenance (S&M) to maintain safe conditions.

When fully deactivated, the facilities will be unoccupied, empty, and locked. The facilities will contain no active systems or utilities except for surveillance lighting and any necessary monitoring instrumentation.

Enabling Assumptions:

The facility will achieve a radiological facility hazard category. The radiological facility limits given in DOE-STD-1027 are inherently conservative for establishing post-deactivation inventory limits. If the actual conditions at the 324 Facility are such that a lower release fraction can be justified for plausible accident scenarios, then it may be possible to show that higher residual radionuclide inventory than the radiological facility limits may be acceptable through a rigorous hazards analysis. If the hazards analysis shows that adequate safety to workers, off-site individuals, and the environment can be maintained with only passive mitigating facility systems under plausible accident scenarios, then deactivating all safety systems would be acceptable, whether or not the generic radiological inventory limits of DOE-STD-1027 have been attained.

The fire hazards analysis will determine that fire detection and suppression systems will not be required during post deactivation.

The asbestos assessment will not find any significant quantities of friable asbestos and that the majority of non-friable and encapsulated asbestos-containing material is in an acceptable end state.

Clean closure requirements for the REC, the HLV and LLV, the piping, and the miscellaneous areas will include removing the waste inventory with subsequent decontamination, as necessary, to meet closure performance standards per DOE/RL 96-73.

324/327 Building Stabilization/Deactivation Project Organization Mission (RL-TP08)

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The 324 Facility Stabilization Project mission is to achieve a safe, stable, and environmentally sound facility condition by stabilization and deactivation, that would be suitable for an extended period of Surveillance and Maintenance (S&M) pending final decommissioning, as quickly and economically as possible, and to place the facility in a condition acceptable for transfer to the Environmental Restoration Contractor(ERC). Final decontamination and decommissioning will be accomplished after transfer to the ERC.

The 324 Facility deactivation phase will also include closure actions for areas of the 324 Facility in accordance with DOE/RL 96-73.

324/327 Facility Transition Project Principle End Point Targets

Reduce the annual 324/327 Surveillance and Maintenance costs for each building. (Current baseline is \$400,000 for both facilities).

Accomplish the deactivation and placement of the 324 and 327 Buildings into low-cost S&M by October 17, 2007.

Facility configuration will be established such that limited active systems are not required for safety and environmental confinement.

Deactivation will be performed in a way that will result in a redesignation of the 324 and 327 Buildings as radiological facilities in accordance with the criteria and guidelines provided in DOE-STD-1027, Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports.

Closure activities will be completed for the radiochemical engineering cells (REC) and high level vault (HLV) + LLV + associated areas to meet current Tri-Party Agreement (TPA) commitments.

324/327 Facility Transition Project Supported End Point Targets

The acceptable end state is defined by the following programmatic and physical results.

Programmatic:

- The building stabilization phase was completed with termination of operations, establishment of a Surveillance and Maintenance (S&M) program, achievement of facility-specific end points, and initiation of the deactivation Phase.
- The deactivation phase resulted in the successful completion and acceptance of the end-point interim established for each facility.
- The 324/327 Buildings were placed in a condition acceptable for transfer from the Office of Facilities Transition and Management (EM-60) to the Office of Environmental Restoration (EM-40).
- The facility stabilization activities placed the facility in a condition that achieves a "radiological facility" category (DOE 1992).
- A memorandum of agreement (MOA) between BWHC and BHI is approved and issued that delineates and transfers responsibilities for the future building S&M activities to BHI.
- Stabilization activities that required removal and disposal of radioactive, dangerous, and mixed waste (e.g., during tank flushing, excessing, RCRA

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permitting and waste disposal) complied with Federal, State, and Local regulations and requirements.

- The facility is maintained in a safe and stable condition by means of a methodical surveillance and maintenance (S&M) program.
- Material accountability, such as the SNM inventory, was reconciled.
- Facility structural integrity was verified for a minimum of five years and documented in the facility turnover package.
- Legacy equipment to remain with the building was identified, documented in the turnover package, and abandoned in place.
- The facility was placed in a physical condition adequate to contain and monitor any radioactive contamination.
- The "as left" radiation contamination survey of the facility and surrounding areas was included in the deactivation records as part of the turnover package.
- The SNM, fuels, and solid and liquid radioactive, hazardous, and mixed waste inventories were removed from the facility, or exceptions of nuclear and hazardous material remaining in the facility was identified and characterized by location, type, quantity, and controls for such materials, were documented and approved for which an end condition cannot be determined.
- The building was left unoccupied, empty, locked, and maintained with minimum entry requirements pending decontamination and decommissioning.
- The building personnel have been relocated
- Radioactive, dangerous, and mixed wastes were removed using Reasonable Best Effort Methodology and disposed of in compliance with applicable regulations and requirements. Reasonable Best Effort is characterized by reducing parameters to "As Low As Economically Achievable" (ALEA) and implies use of a "Best Management Practices" approach to reach realistic, logical, and cost-effective end states or conclusions.

Physical:

- Fissionable material was removed to the necessary extent to allow the 324/327 facilities to achieve a "radiological facility" category (DOE 1992).
- Hazards, nuclear and non-nuclear, were eliminated or reduced by removing, isolating, draining, and minimizing hazardous material.
- Radiation fields were eliminated, reduced, shielded or isolated, with proper radiological posting of remaining radiation fields.
- Radioactive contamination was removed, reduced, or isolated/contained to mitigate and prevent spreading.
- Housekeeping was performed and removal of unattached (e.g., portable and/or mobile) material, equipment, office furniture and files, and chemicals was completed.
- Remaining facility hazards were isolated and contained from personnel and the environment using blanking, plugging, covering, removal, screening, and sealing of doors, windows, pipe penetrations, holes, drains, etc.
- Facility doors were locked from the inside except those required for entrance by surveillance personnel.
- To maximum extent possible, unsurveilled areas of the facility were sealed to prevent unauthorized access.
- Areas requiring access for inspection were sufficiently decontaminated.
- Installation of instrumentation such as alarms, windows in ancillary buildings, and surveillance lighting was completed to enable monitoring, surveillance, and control of the facility pending final disposition.
- Structural repairs, roof sealing, and facility modifications (e.g, upgrade the of the ventilation system) were completed to establish a safe and stable facility.
- Proper equipment labeling was provided to enable future D&D activities.
- Chemical and radioactive inventories were stabilized to minimize facility risks and allow for reduced S&M.
- Mobile quantities of SNM and SNF and related items were removed.
- The facility process vessels and tanks were emptied/drained and flushed with some process equipment disassembled to remove inventory.

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- Failed equipment/jumpers were removed.
 - Piping to external facility interfaces was isolated unless deemed necessary to support D&D.
 - Facility supplies were removed.
 - Facility high-radiation areas were shielded to enable S&M and D&D activities.
 - Facility laboratory hoods containing significant SNM were decontaminated.
 - Facility laboratory hoods were decontaminated/isolated and hood exhaust ductwork was isolated/contained.
 - Facility floor drains were plugged, removed, or isolated.
 - Facility room floors, wall, and ceiling surfaces were decontaminated of hazardous and radioactive materials and resurfaced as necessary to enable S&M and D&D activities.
 - Facility system headers were drained and flushed as necessary to hazardous and radioactive materials.
 - Facility friable asbestos materials were sealed/stabilized to enable S&M and D&D activities.
 - Facility laboratory gloveboxes were decontaminated and residual contamination fixed to enable S&M and D&D activities.
 - Facility liquid and gaseous effluent streams were eliminated.
 - Facility organic solvents, acid solutions, recovered acid, and chemical and acid inventories were removed.
- Utilities/Instrumentation Systems:
- The facility contains no active systems or utilities with the exception of the heating, ventilation, and air conditioning (HVAC) system as required to maintain the final confinement barrier, and systems required for monitoring and emission control.
 - Systems required for monitoring and emission control, protection of surveillance personnel, the general public and environment, and vital equipment were sustained.
 - Systems required to respond to emergency conditions expected in the facility's deactivated state and to prevent structural degradation were sustained.
 - Unnecessary utilities and HVAC system lines were isolated.
 - Facility instrument and equipment controls de-energized.
 - Facility steam, water, and compressed air service was eliminated.
 - Facility emergency electrical loads were minimized or eliminated.
 - Facility electrical service was provided for selected lighting panels as necessary to support subsequent S&M and D&D activities.
 - Facility monitoring functions consolidated at a single monitoring location.
 - Facility security systems and procedures are adequate to prevent unauthorized entry.

The technical strategy for the 324 Facility includes the following objectives:

- Establish a 324 Facility configuration such that active systems are not required for safety and environmental confinement.
- Perform stabilization in a manner that will result in a redesignation of the 324 facility as a "radiological facility" in accordance with the criteria and guidelines provided in DOE-STD-1027, Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports.
- Complete closure activities per DOE/RL 96-73 to meet current TPA commitments.
- Protect the environment from contamination during any stabilization activities and associated structure upgrades and modifications required to complete the project goals.
- Sustain the systems required for protection of surveillance personnel, the general public and environment, and vital equipment.

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- Sustain the systems required to respond to emergency conditions expected in the facility's deactivated state and to prevent structural degradation.
- Ensure that hazards to personnel or the environment are controlled through partial closure, removal, isolation, mitigation, or stabilization of such hazards.
- Ensure structures be maintained in a safe condition with threats to human health and safety removed or appropriate compensatory measures (barriers, access controls, administrative controls, etc.) implemented.

The technical strategy for 327 Facility includes the following objectives:

- Establish a 327 Facility configuration such that active systems are not required for safety and environmental confinement.
- Perform stabilization in a manner that will result in a redesignation of the 327 facility as a "radiological facility" in accordance with the criteria and guidelines provided in DOE-STD-1027, Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports.
- Protect the environment from contamination during any stabilization activities and associated structure upgrades and modifications required to complete the project goals.
- Sustain the systems required for protection of surveillance personnel, the general public and environment, and vital equipment.
- Sustain the systems required to respond to emergency conditions expected in the facility's deactivated state and to prevent structural degradation.
- Ensure that hazards to personnel or the environment are controlled through partial closure, removal, isolation, mitigation, or stabilization of such hazards.
- Ensure structures be maintained in a safe condition with threats to human health and safety removed or appropriate compensatory measures (barriers, access controls, administrative controls, etc.) implemented.

Scope: Specific project scope from the Hanford Site technical baseline is provided below in terms of the systems that the project has responsibility for.

324 Facility

- Maintain Safe & Compliant Materials in 324 Facility: SNF inventory currently located in the 324 Building is in B-Cell and D-Cell within the Radiochemical Engineering Cells. The current inventory includes five pressurized waste reactor (PWR) fuel assemblies, two boiling water reactor (BWR) fuel assemblies, and 32 intact fuel rods. There are also approximately 16 rod-equivalent BWR and PWR fuel rod segments, and 21 kilograms PWR fuel pellet fragments located in the B-Cell and D-Cell of the 324 Building. All of these materials were irradiated in commercial electric power reactors and were discharged from their parent reactors as spent fuel at the end of their life cycles. After discharge, the materials were acquired by DOE for fuels examination program. Material irradiation levels range from 27.5 to 42.7 gigawatt days/metric ton of uranium. All SNF materials are contained in dry storage and maintained in a safe configuration with other in-cell fissile materials in compliance with the 324 Building Authorization Basis Documents.
- Maintain Safe & Compliant 324 Facility: The Minimum Safe subproject comprises the building surveillance and maintenance required to maintain building systems and structures. The subproject includes required preventive maintenance and calibrations; repair of failed and

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malfunctioning equipment; walkdown of safety systems, equipment, and building grounds (operational surveillance); routine radiological surveys, source checks, and dosimetry; building utilities and assessments; and waste management assessments. The activity also includes management and assessment activities: project direction; management and controls; and environmental, quality, and safety oversight for the minimum safe condition. Subproject-specific oversight is included in the subproject). The activity also includes training mandated by the U.S. Occupational Safety and Health Administration (OSHA), RCRA, and DOE. Building orientation and building-specific emergency and response training are covered in this activity. The activity also provides safe, secure, and compliant storage of special nuclear materials until final disposition of the material is accomplished. The activity also includes physical security, safeguards accounting and material control, record keeping, studies, evaluations, and assessments.

, The activity represents the mortgage that will be reduced by implementing the waste removal, risk reduction, and deactivation subprojects. Completing waste removal, risk reduction, and deactivation activities will eliminate the drivers behind minimum safe requirements, and reduce the resources required to maintain the facility.

· Remove Material from 324 Facility: **Stabilize 324 Building Subprojects**

The Stabilization workscope, which is a prerequisite to building deactivation and results in significant legacy waste removal and radiological risk reduction from these buildings.

324 Closure Plan Phase I

, The 324 Building B-Cell Cleanout subproject is the most significant stabilization activity currently being conducted in the 324 Building. Completion of this subproject will significantly reduce actual risk to personnel and potential risk to the public and environment. During 25 years of research and development (R&D) activities, B-Cell has accumulated a significant amount (over 2.5 million curies) of radioactive and mixed waste, of which 1.5 million is in a potentially dispersible form. (An additional 1.5 million curies is suspected to be contained inside a process tank inside B-Cell, previously identified as emptied. The 324 Building is located within 304.8 meters of the Columbia River, within 1.6 kilometers of agricultural land, and within 3.2 kilometers of public schools. In addition prior use of B-Cell included unpermitted TSD activities requiring closure. Closure requirements are found in DOE/RL 96-73. The subproject also includes maintenance of systems and radiological and operational surveillance associated with equipment and systems required to remove and handle the associated waste streams resulting from B-Cell cleanout. On completion of this project, manpower resources will be available to initiate the overall deactivation efforts.

324 Closure Plan Phase II

, Phase II includes cleanout and stabilization of the pipe trench and low-level vaults. The pipe trench contains piping connections and jumpers that allowed transfers between cells, between the vaults and the cells, and between process equipment within the cells. The low-level vault primarily contained decontamination solutions staged prior to shipment to the double shell tanks. Closure requirements are found in DOE/RL 96-73.

324 Closure Plan Phase III

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Phase III includes various activities within ancillary and support areas within the 324 Radiochemical Engineering Cells. Closure requirements are found in DOE/RL 96-73.

324 Closure Plan Phase IV

Phase IV includes cleanout and stabilization of the D-Cell and high-level vault. These areas will also be used in the liquid waste handling and processing of decontamination solution generated during Phase I through Phase III. Closure requirements are found in DOE/RL 96-73.

Transition 324 Facility: Future 324 Transition Subprojects

The 324 transition includes final deactivation of facility operating and monitoring systems. The building deactivation subprojects include activities to identify, isolate, stabilize, and remove building hazards (i.e., chemical, radiological, industrial) from the 324 Buildings hot cells and place the buildings in a low surveillance and maintenance required status.

327 Facility

Maintain Safe & Compliant Materials in 327 Facility: The SNF fuel stored within the 327 Building is stored in the waste storage basin. The water in the basin is chemistry controlled to minimize corrosion and limit contamination. The fuel storage is maintained using minimum spacing requirements for criticality control. Additionally, a biannual audit is performed to maintain acceptability. Also, all transfers into, out of the facility, and within the facility are maintained for accountability.

Maintain Safe & Compliant 327 Facility: The Minimum Safe subproject comprises the building surveillance and maintenance required to maintain building systems and structures. The subproject includes required preventive maintenance and calibrations; repair of failed and malfunctioning equipment; walkdown of safety systems, equipment, and building grounds (operational surveillance); routine radiological surveys, source checks, and dosimetry; building utilities and assessments; and waste management assessments. The activity also includes management and assessment activities: project direction; management and controls; and environmental, quality, and safety oversight for the minimum safe condition. Subproject-specific oversight is included in the subproject). The activity also includes training mandated by the U.S. Occupational Safety and Health Administration (OSHA), RCRA, and DOE. Building orientation and building-specific emergency and response training are covered in this activity. The activity also provides safe, secure, and compliant storage of special nuclear materials until final disposition of the material is accomplished. The activity also includes physical security, safeguards accounting and material control, record keeping, studies, evaluations, and assessments.

The activity represents the mortgage that will be reduced by implementing the waste removal, risk reduction, and deactivation subprojects. Completing waste removal, risk reduction, and deactivation activities will eliminate the drivers behind minimum safe requirements, and reduce the resources required to maintain the facility.

Remove Material from 327 Facility: Remove the nuclear materials from the 327 Building for treatment or disposition.

Transition 327 Facility: Future 324/327 Buildings Stabilization/Deactivation Subprojects

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, The 327 transition includes final deactivation of facility operating and monitoring systems. The initial building deactivation include activities to identify, isolate, stabilize, and remove building hazards (i.e., chemical, radiological, industrial) from the 327 Building hot cells and place the building in a low surveillance and maintenance requirement status.

Technical Approach: The end point targets in the Hanford Strategic Plan addressed by this project include:

- Reuse facilities in the south 600 area for economic diversification where feasible.
- Transition high cost surplus facilities in the South 600 Area to a low cost, stable, deactivated condition.
- Transition the 324/327 Buildings to a low cost, stable, deactivated condition and disposition their nuclear materials (including 324 Building tank waste).

The technical approach and technology initiatives for the Project to accomplish the Hanford Strategic Plan end point targets are identified below.

Project Status in FY 2006:

324 Facility

- The 324 Facility project status in FY2006 is based on the assumption that the current baseline funding will be maintained as currently defined in the Project Management Plan (PMP). The minsafe activities for 324 Facility will be maintained; this will be at a reduced level to reflect the status of systems and equipment that have been deactivated in prior years.

All of the fieldwork will be completed to satisfy the 324 Closure Plan, the cells within the facility will be deactivated. The remaining work to be completed for deactivation will be completion of HVAC deactivation, maintenance and manipulator shops deactivation, and completing the shutdown of the facility utility system. This deactivation work is expected to complete in early FY2007. Once this is completed the 324 Facility will transition into long term Surveillance and Maintenance pending decommissioning.

327 Facility

- The 327 Facility project status in FY2006 is based on the assumption that the current baseline funding will be maintained as currently defined in the Project Management Plan (PMP). The minsafe activities for 324 Facility will be maintained; this will be at a reduced level to reflect the status of systems and equipment that have been deactivated in prior years.

Seven of the thirteen Hot Cells will be deactivated prior to the start of FY2006. In FY2006 the remaining Hot Cells will be deactivated along with commencement of the deactivation of the 327 HVAC systems and the facility support systems and areas.

Post-2006 Project Scope:

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324 Facility

· The 324 Facility will be in the final year of deactivation based on the assumption that the current baseline funding will be maintained as currently defined in the Project Management Plan (PMP). The minsafe activities for 324 Facility will be maintained; this will be at a reduced level to reflect the status of systems and equipment that have been deactivated in prior years. Deactivation activities are currently scheduled for completion by the first quarter of FY2007. Once deactivation is completed the 324 Facility will transition into long term Surveillance and Maintenance pending decommissioning.

327 Facility

· The 327 Facility will be in the final year of deactivation based on the assumption that the current baseline funding will be maintained as currently defined in the Project Management Plan (PMP). The minsafe activities for 327 Facility will be maintained; this will be at a reduced level to reflect the status of systems and equipment that have been deactivated in prior years. Deactivation activities are currently scheduled for completion by the end of FY2007. Once deactivation is completed the 327 Facility will transition into long term Surveillance and Maintenance pending decommissioning.

Project End State

Specific work activities to close the facilities under this Project to be performed by others at the end of this Project's mission are identified below.324 Facility

Work associated with facility performed by 300 Area Source Remedial Action:

Decontaminate and Decommission (D&D) 324 Facility

Work associated with facility performed by Science & Technologies:

Provide R&D support for the SNF and other Projects

327 Facility

Work associated with facility performed by 300 Area Source Remedial Action:

Decontaminate and Decommission (D&D) 327 Facility

Work associated with facility performed by PNNL Waste Management:

Provide SNF Radioactive Sample Services

Cost Baseline Comments:

An activity based cost (ABC) estimate was drafted and submitted to DOE on July 31, 1997 detailing work scope, budget, and schedule through fiscal year 2006. This estimate incorporates all safe compliance issues into a systems engineering/project management approach.

Safety & Health Hazards:

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The 324 and 327 Facilities contain significant inventories of high dose rate material. This combined with the close proximity to the Columbia River, public schools, and a residential zone will require risk management and mitigation throughout the life of the facilities. This risk evaluation address accident scenarios presented in the 324 and 327 facility Safety analysis report and does not include risks associated with a terrorist act. The 324 facility is located within 1,000 feet of the Columbia River, within 1 mile of agricultural land, and within 2 miles of public schools. 324 contains over 4 million curies of radioactive material. The B-Cell contains several million curies of potentially dispersible material which could be released in the event of a natural disaster or a breach of security. The 324 facility current estimated off-site effective dose equivalent (EDE) given realistic accident scenarios exceeds the DOE EDE guidelines by 200 percent. If a breach of containment did occur a release of this material in its current situation would result in a 16 rem EDE to the offsite maximally exposed individual (MEI). The 327 facility is located within 2,000 feet of the Columbia River, within 1 mile of agricultural land, and within 2 miles of public schools. 327 contains over 2 million curies of radioactive material. The 327 facility current estimated off-site effective dose equivalent (EDE) given realistic accident scenarios exceeds the DOE EDE. If a breach of containment did occur a release of this material in its current situation would lead to a 1.5 rem EDE to the offsite maximally exposed individual (MEI).

In addition, there are safety concerns associated with aging process equipment containing radioactive material holdup in ventilation, piping and other equipment which could result in chemical or radiological exposure. As the project progresses, workers may encounter electrical hazards due to normal age related deterioration of these buildings. In addition, workers can be expected to encounter normal occupational hazards, e.g. lifting, tripping, or falls, in each building in this cluster. These hazards will persist throughout the landlord, nuclear material removal and deactivation phases. In the decommissioning and closure phase of the project, the principle hazards will involve normal occupational safety hazards related to building deconstruction and soil remediation.

Safety & Health Work Performance:

The resources necessary to accomplish the work safely are provided through the Authorization Basis, the site Health and Safety Program requirements, and through the resources allocated to the site's integrated safety management system in the following functional categories: radiological safety, criticality safety, emergency management, fire safety, industrial hygiene, nuclear safety, occupational medicine, occupational safety, safeguards and security, safety integration, performance oversight, and standards management. S&H resources are planned and allocated into these categories by cost centers throughout the work breakdown structure and resource loaded into the project for each fiscal year. Since the activities being performed in Building 324/327 are currently in operation, no restart reviews are currently anticipated. The S&H resources necessary to accomplish the Building 324/327 cluster landlord functions include: fire protection personnel to conduct biweekly fire system safety checks, monthly safeguard and accountability reviews of emergency procedures, periodic (bimonthly) industrial hygiene surveys, and radiological control technicians to conduct daily radiological monitoring and release workforce from the buildings. No appreciable change in S&H resource requirements is anticipated for these landlord activities until completion of nuclear material removal, and conduct of physical deactivation of the facility commences.

PBS Comments:

The deactivation of the 324 and 327 hot-cells and facilities will be a significant engineering challenge and accomplishment. Great interest has been generated by the state of Washington and various "stakeholder" organizations, e.g., Heart of America Northwest, Hanford Education Action League (HEAL), the Federated Indian Tribes, etc., to remove legacy and residual contamination from the 300 Area and away from the Columbia River and to accelerate cleanup as quickly as is safe.

Baseline Validation Narrative:

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The Project Management Plan includes an Activity Based Cost Estimate and resource loaded schedule. Several audits have been conducted by various oversight groups associated with FDH (PHMC Integrator) and Kaiser (GSSC support to DOE-RL). These audits do not qualify as a thorough validation but included spot checks throughout the estimate to ensure ABC principles and methods were used. All audits have concluded that ABC estimates and principles were successfully applied. An independent validation is planned for completion in the third quarter of FY 1999.

General PBS Information

Project Validated?

Date Validated:

Has Headquarters reviewed and approved project?

Yes

Date Project was Added: 12/1/1997

Baseline Submission Date:

FEDPLAN Project? Yes

Drivers:	CERCLA	RCRA	DNFSB	AEA	UMTRCA	State	DOE Orders	Other
		Y					Y	Y

Project Identification Information

DOE Project Manager: L. D. Romine

DOE Project Manager Phone Number: 509-376-4747

DOE Project Manager Fax Number: 509-376-0695

DOE Project Manager e-mail address: larry_d_romine@rl.gov

Is this a High Visibility Project (Y/N):

Planning Section

Baseline Costs (in thousands of dollars)

	1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006
PBS Baseline (current year dollars)	325,878	13,943	339,821	23,661	24,360	33,046	29,580	33,926	31,207	36,818	36,965	34,583	38,709	31,755	25,208

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Baseline Costs (in thousands of dollars)

	1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006	
PBS Baseline (constant 1999 dollars)	307,190	11,727	318,917	23,661	24,360	33,046	29,580	33,926	30,565	35,284	34,663	31,731	34,752	27,895	21,667	
PBS EM Baseline (current year dollars)	325,878	13,943	339,821	23,661	24,360	33,046	29,580	33,926	31,207	36,818	36,965	34,583	38,709	31,755	25,208	
PBS EM Baseline (constant 1999 dollars)	307,190	11,727	318,917	23,661	24,360	33,046	29,580	33,926	30,565	35,284	34,663	31,731	34,752	27,895	21,667	
	2007	2008	2009	2010	2011- 2015	2016- 2020	2021- 2025	2026- 2030	2031- 2035	2036- 2040	2041- 2045	2046- 2050	2051- 2055	2056- 2060	2061- 2065	2066- 2070
PBS Baseline (current year dollars)	13,943	0	0	0	0	0	0	0	0	0	0	0				
PBS Baseline (constant 1999 dollars)	11,727	0	0	0	0	0	0	0	0	0	0	0				
PBS EM Baseline (current year dollars)	13,943	0	0	0	0	0	0	0	0	0	0	0				
PBS EM Baseline (constant 1999 dollars)	11,727	0	0	0	0	0	0	0	0	0	0	0				

Baseline Escalation Rates

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
0.00%	0.00%	0.00%	2.10%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%
2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070

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2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%	2.20%			

Project Reconciliation

Project Completion Date Changes:

Previously Projected End Date of Project: 3/9/2005

Current Projected End Date of Project: 9/7/2007

Explanation of Project Completion Date Difference (if applicable):

Project Cost Estimates (in thousands of dollars)

Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):	192,482	Actual 1997 Cost:	24,360	Actual 1998 Cost:	29,580
Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars):	138,542	Inflation Adjustment (2.7% to convert 1998 to 1999 dollars):			3,741
Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	142,283				

Project Cost Changes

Cost Adjustments Reconciliation Narratives

Cost Change Due to Scope Deletions (-):

Cost Reductions Due to Efficiencies (-):

Cost Associated with New Scope (+):

Cost Growth Associated with Scope Previously Reported (+):

Cost Reductions Due to Science & Technology Efficiencies (-):

Subtotal: 142,283

Additional Amount to Reconcile (+): 119,927

Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars): 262,210

Milestones

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Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
COMPLETE CLOSURE OF NON-PERMITTED MW STORAGE UNITS IN 324/327 REC	TRP-00-901	10/17/2005	10/17/2005	12/31/2049			Y				
COMPLETE REMOVAL & XFER & INIT STRG OF PH.III, 300A SCW & MATERIA	TRP-06-901	9/30/2006	9/30/2006	9/30/2006			Y				
COMPLETE REMOVAL & XFER & INIT. STRG OF PH. II, 300A SCW & MATERI	TRP-04-901	9/30/2004	9/30/2004	9/30/2004			Y				
COMPLETE REMOVAL & XFER & INIT. STRG OF PH.1, 300A SCW & MATERIAL	TRP-02-901	9/30/2002	9/30/2002	9/30/2002			Y				
COMPLETE REMOVAL OF B-CELL EQUIPMENT AND 100% DISPERSIBLES	TRP-99-901	5/31/1999	11/30/2000	11/30/2000			Y				
SHIPMENT OF ALL CS/SR/TO APPROVED STORAGE LOCATION	TRP-98-903	12/31/1998	12/31/1998	12/31/1998		9/29/1998	Y				
SUBMIT 300 AREA SCW PROJECT MANAGEMENT PLAN	TRP-00-902	9/30/2000	9/30/2000	9/30/2000			Y			Y	
REMOVAL & TRANSFER OF PHASE III 300 AREA SCW COMPLETE	TRP-06-902	9/29/2006	9/29/2006								
REVISE SAR (PA 2.3.1)	TRP-99-935	8/30/1999	8/30/1999								
CONTAINERIZE DISPERSIBLE UNDER 2A RACK COMPLETE	TRP-99-933	9/2/1999	9/2/1999								
2A RACK 382-B SHIPMENTS COMPLETE	TRP-99-909	8/19/1999	8/19/1999								
1A 3-82B CAST SHIPMENTS COMPLETE	TRP-99-907	5/7/1999	5/7/1999								
2A RACK REMOVAL AND SIZE REDUCTION COMPLETE	TRP-99-936	8/19/1999	8/19/1999								
PA 2.1.1 REMOVE, PACKAGE AND SHIP EXCESS EQUIPMENT FROM B CELL	TRP-99-937	9/30/1999	9/30/1999								
1A RACK REMOVAL AND SIZE REDUCTION COMPLETE	TRP-99-938	5/6/1999	5/6/1999								
SNF SEGMENTS/FRAGMENTS PACKAGING & REMOVAL COMPLETE	TRP-03-912	7/1/2003	7/1/2003								

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Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
SNF ASSEMBLIES/RODS PACKAGING & REMOVAL COMPLETE	TRP-03-911	2/28/2003	2/28/2003								
SCW SHIPMENTS TO STORAGE COMPLETE	TRP-00-931	9/30/2000	9/30/2000								
324 LWHS DESIGN/CONSTRUCTION COMPLETE	TRP-00-915	6/30/2000	6/30/2000								
TRANSFER OF SNF FROM B-CELL COMPLETE	TRP-99-910	9/30/1999	9/30/1999								
PUREX TUNNELS READY TO RECEIVE B-CELL MW/SCW	TRP-00-914	4/20/2000	4/20/2000								
RL APPROVE CLOSURE REPORT (PHASE I)	TRP-01-916	9/20/2001	9/20/2001								
B-CELL CLEANOUT PROJECT COMPLETE	TRP-01-913	9/30/2001	9/30/2001								
COMPLETE ENGINEERING STUDY: VACUUM DISPERSIBLES FROM B-CELL FLOOR	TRP-99-941	9/15/1999	9/15/1999							Y	
RL APPROVE LINER SURFACES - PE CERTIFICATION	TRP-01-943	4/18/2001	4/18/2001								
APPROVE INTEGRITY ASSESSMENT REPORT	TRP-01-944	8/14/2001	8/14/2001								
SUBMITTAL OF CLOSURE PLAN PE CERTIFICATION	TRP-01-945	8/24/2001	8/24/2001								
CSCI PROCESSING COMPLETE & TRANSFERRED TO WESF	TRP-99-934	10/31/1998	10/31/1998			9/29/1998					
RL APPROVE CLOSURE REORT (PHASE II)	TRP-05-916	1/14/2005	1/14/2005								
RL APPROVE CLOSURE REORT (PHASE III)	TRP-04-916	3/14/2005	3/14/2005								
FINAL DECONTAMINATION HLV COMPLETE	TRP-05-917	2/23/2005	2/23/2005								
RL APPROVE CLOSURE REPORT (PHASE IV)	TRP-05-918	10/30/2005	10/30/2005								
324 DEACTIVATION COMPLETE	TRP-06-921	12/31/2006	12/31/2006								
SNF GENERATED WASTE & EQUIPMENT REMOVED FROM 327 F & G CELLS	TRP-99-939	9/30/1999	9/30/1999						Y		

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Milestones

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PREPARE BASIS FOR INTERIM OPERATION	TRP-00-922	9/30/1999	9/30/1999								
INCREASED PERFORMANCE / BIO FOR 327 BUILDING	TRP-99-942	9/30/1999	9/30/1999								
WASTE DRUM SHIPPING & DISPOSAL COMPLETE	TRP-02-923	9/30/2002	9/30/2002								
MET SAMPLE RETRIEVAL & REPACKAGING COMPLETE	TRP-03-922	9/30/2003	9/30/2003								
RADIOLOGICAL BASEMENT AREA DEACTIVATION COMPLETE	TRP-05-924	12/31/2004	12/31/2004								
327 HOT CELLS & WASTER BASIN DEACTIVAION COMPLETE	TRP-06-926	9/30/2006	9/30/2006								
327 ION EXCHANGE COLUMN DEACTIVATION COMPLETE	TRP-04-925	3/31/2004	3/31/2004								
327 EXTERIOR AND YARD DEACTIVATION COMPLETE	TRP-07-927	4/30/2007	4/30/2007								
327 ROOF & EQUIPMENT DEACTIVATION COMPLETE	TRP-07-928	9/7/2007	9/7/2007								
327 HVAC DEACTIVATION COMPLETE	TRP-07-929	12/31/2006	12/31/2006								
327 DEACTIVATION COMPLETE	TRP-07-930	9/7/2007	9/7/2007								
COMPLETE 324 REC DECONTAMINATION STRATEGY STUDY	TRP-99-940	8/15/1999	8/15/1999							Y	
Begin 324/327 Facility Transition Project	PBS-97-023		2/28/1997								

Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
COMPLETE CLOSURE OF NON-	TRP-00-901										The B-Cell Cleanout sub-project

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Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
PERMITTED MW STORAGE UNITS IN 324/327 REC											(BCCP) is a multi-year effort to eliminate legacy equipment and potential dispersible nuclear material from the B-Cell in the 324 Facility. B-Cell was designed to handle high activity radioactive wastes and materials in a
COMPLETE REMOVAL & XFER & INIT STRG OF PH.III, 300A SCW & MATERIA	TRP-06-901										Complete removal and transfer, and initiate storage of Phase III 300 Area SCW and materials. Phase III inventory will consist of any remaining 300 Area SCW and materials.
COMPLETE REMOVAL & XFER & INIT. STRG OF PH. II, 300A SCW & MATERI	TRP-04-901										Several Facilities in the 300 Area operated by BWHC and PNNL contain significant quantities of high-dose-rate nuclear material and waste requiring storage or disposal outside the 300 Area. Because the high activity levels of waste and difficulties in cha
COMPLETE REMOVAL & XFER & INIT. STRG OF PH.1, 300A SCW & MATERIAL	TRP-02-901										Several Facilities in the 300 Area operated by BWHC and PNNL contain significant quantities of high-dose-rate nuclear material and waste requiring storage or disposal outside the 300 area. Because the high activity levels of the waste and difficulties in
COMPLETE REMOVAL OF B-CELL EQUIPMENT AND 100% DISPERSIBLES	TRP-99-901		Y								Requires the size reduction and removal of all excess B-Cell equipment. In addition the mixed waste contained within dispersibles,

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Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
SHIPMENT OF ALL CS/SR/TO APPROVED STORAGE LOCATION	TRP-98-903										HLV filters, tank heels, and rack shield plugs, have been packaged and shipped to permitted storage and/or disposal facilities
SUBMIT 300 AREA SCW PROJECT MANAGEMENT PLAN	TRP-00-902										CsCl powder, pellets, and capsules are currently stored in the 324 shielded material facilities. The powder and pellets (resulting from earlier failed capsules) and the Nordian Capsule (CsCl) will be packaged in special form containers and transferred in
REMOVAL & TRANSFER OF PHASE III 300 AREA SCW COMPLETE	TRP-06-902										The 300 Area SCW Project Management Plan (PMP) will include all elements required by the Agreement Action Plan section 11.5 contained within the TPA Change Package that incorporated M-92 into the overall TPA agreement. The SCW PMP will be coordinated with
REVISE SAR (PA 2.3.1)	TRP-99-935										The continued safe operation of the 324 Building is dependant upon the accuracy and completeness of the SAR. Failure to analyze safety processes and properly document safety procedures puts BWHC at risk. This task encompasses those activities required to
CONTAINERIZE DISPERSIBLE UNDER 2A RACK COMPLETE	TRP-99-933										The description of this milestone is recovery and containerization of

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Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
2A RACK 382-B SHIPMENTS COMPLETE	TRP-99-909										dispersible material from under the 2A Rack, located in the 324 Facility Radiochemical Engineering Complex (REC) B-Cell. This milestone includes the shipment of grouted waste containers, containing size-reduced pieces of the Radiochemical Engineering Complex (REC) B-Cell 2A Rack, in the 382-B or equivalent shipping casks to the Hanford Site 200 West Area Burial Grounds for d
1A 3-82B CAST SHIPMENTS COMPLETE	TRP-99-907										This milestone includes the shipment of grouted waste containers, containing size-reduced pieces of the 324 Facility B-Cell 1A Rack, in the SEG-3-82B or equivalent shipping casks to the Hanford Site 200 West Area Burial Grounds for disposal.
2A RACK REMOVAL AND SIZE REDUCTION COMPLETE	TRP-99-936										This milestone entails the removal and size refuction of the 2A Rack, locatd in the 324 Facijlity Radiochemical Engineering Complex (REC) B-Cell.
PA 2.1.1 REMOVE, PACKAGE AND SHIP EXCESS EQUIPMENT FROM B CELL	TRP-99-937										Complete 2A Rack removal as described in Work Breakdown Structure (WBS) 1K4BOCOF. Complete packaging and shipment of all prior year Low-Level Waste (LLW) legacy grout containers as described in WBS 1K4BOCOAO3. (note; Assumes grout container {GCs} can use

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Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
1A RACK REMOVAL AND SIZE REDUCTION COMPLETE	TRP-99-938										This milestone entails the removal and size reduction of the 1A Rack, located in the 324 Building Radiochemical Engineering Complex (REC) B-Cell.
SNF SEGMENTS/FRAGMENTS PACKAGING & REMOVAL COMPLETE	TRP-03-912										This milestone includes loading and shipping all of the spent nuclear fuel segments/fragments, contained in the 324 Facility Radiochemical Engineering Complex (REC) B-Cell and D-Cell, in EBR II Casks or an equivalent to the 200 Area or an alternate locati
SNF ASSEMBLIES/RODS PACKAGING & REMOVAL COMPLETE	TRP-03-911										This milestone includes loading and shipping all of the spent nuclear fuel (SNF) assemblies/rods, originally contained in the 324 Facility Radiochemical Engineering Complex (REC) B-Cell(to be transferred to A-Cell in FY 1999), in NAC-1 Casks or an equival
SCW SHIPMENTS TO STORAGE COMPLETE	TRP-00-931										MW/SCW currently contained in B-Cell/D-Cell must be packaged and removed from the 324 Facility to meet TPA M89 requirements. MW/SCW materials include dispersible materials from the B-Cell floor and B-Cell tank residuals, high level vault tank filters and
324 LWHS DESIGN/CONSTRUCTION COMPLETE	TRP-00-915										This milestone completes the design, installation and testing of a Liquid Waste Handling System (LWHS) that will process high level liquid

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Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
TRANSFER OF SNF FROM B-CELL COMPLETE	TRP-99-910										waste generated during 324 Facility closure activities. This milestone entails removing the spent nuclear fuel (SNF) out of the 324 Facility Radiochemical Engineering Complex (REC) B-Cell. The SNF rods/assemblies will be transferred into the REC A-Cell or an alternate location. The SNF segments/fragments wil
PUREX TUNNELS READY TO RECEIVE B-CELL MW/SCW	TRP-00-914										The Plutonium Uranium Extraction Facility (PUREX) has been identified as the storage area for the SCW/MW materials currently located with B-Cell. PUREX was deactivated in 1997. In order to re-open the PUREX Tunnels for receipt of waste, electrical servic
RL APPROVE CLOSURE REPORT (PHASE I)	TRP-01-916										The description of this milestone is the approval by DOE-RL of a closure report which documents that the B-Cell closure activities identified in the 324 Radiochemical Engineering Cells, High-Level Vault, Low-Level Vault, and Associated Area Closure Plan (
B-CELL CLEANOUT PROJECT COMPLETE	TRP-01-913		Y								This milestone entails completion of the activities necessary to retrieve, size reduce, package, and dispose of the contaminated material and equipment associated with the B-Cell Cleanout Project (BCCP), in accordance with established Tri-

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Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
COMPLETE ENGINEERING STUDY: VACUUM DISPERSIBLES FROM B-CELL FLOOR	TRP-99-941										Party Agreement Upon final removal of B-Cell equipment and initial removal of the bulk dispersibles, the fine layer of dispersible material will be required to be removed prior to cell decontamination. This study will evaluate various methods and recommend a solution.
RL APPROVE LINER SURFACES - PE CERTIFICATION	TRP-01-943										This milestone entails approval by DOE-RL and certification by a professional engineer or equivalent that B-Cell has met the performance standards for liner integrity and closure specified in the 324 Radiochemical Engineering Cells, High-Level Vault, Low-
APPROVE INTEGRITY ASSESSMENT REPORT	TRP-01-944										This milestone includes approval by DOE-RL of an integrity assessment report prepared by BWHC to document the results of the B-Cell liner integrity assessment and to demonstrate that B-Cell has met the performance standards for liner integrity specified i
SUBMITTAL OF CLOSURE PLAN PE CERTIFICATION	TRP-01-945										This milestone includes the development, submittal to DOE-RL, and certification by a professional engineer or equivalent of a closure plan which documents the B-Cell closusre activities which will be performed for the 324 Radiochemical Engineering Cells,

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Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
CSCI PROCESSING COMPLETE & TRANSFERRED TO WESF	TRP-99-934										CsCl power, pellets and capsules are currently stored in the 324 Facility. The powder, pellets and Nordan Capsules will be packaged into Waste Encapsulation and Storage Facility (WESF) Outer Containers. They will then be seal welded into Special Form Co
RL APPROVE CLOSURE REORT (PHASE II)	TRP-05-916										The description of this milestone is the approval by DOE-RL of a closure report which documents that the Radiochemical Engineering Complex (REC) Trench and Low-Level Vault (LLV) closure activities identified in the 324 Radiochemical Engineering Cells, Hig
RL APPROVE CLOSURE REORT (PHASE III)	TRP-04-916										The description of this milestone is the approval by DOE-RL of a closure report which documents that the Associated Areas closure activities identified in the 324 Radiochemical Engineering Cells, High-Level Vault, Low-Level Vault, and Associated Areas Clo
FINAL DECONTAMINATION HLTV COMPLETE	TRP-05-917										The description of this milestone is completion of the final decontamination or washout of the High-Leval Vault (HLV) tanks in the 324 Facility (Tanks 104, 105, 106, and 107) and associated piping, to allow contract handling (manned entry) during the dism
RL APPROVE CLOSURE	TRP-05-918										The description of this milestone is

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Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
REPORT (PHASE IV)											the approval by DOE-RL of a closure report which documents that the High-Level Vault (HLV) closure activities identified in the 324 Radiochemical Engineering Cells; High-Level Vault, Low-Level Vault, and Associated Are
324 DEACTIVATION COMPLETE	TRP-06-921				Y						Deactivare the 324 Faciltiy to reduce potential hazards to personnel, the public, and the environment and allow for a reduced level of surveillance and maintenance of the facility during the extended surveillance period while awaiting final Deactivation a
SNF GENERATED WASTE & EQUIPMENT REMOVED FROM 327 F & G CELLS	TRP-99-939										Complete the removal of all Spent Nuclear Fuel (SNF) Program generated waste and equipment from the F and G Cells in the 327 Facility (Ref. PA 2.2.1).
PREPARE BASIS FOR INTERIM OPERATION	TRP-00-922										The Basis for Interim Operation (BIO) acts as the safety basis document that will provide safety envelope criteria in which to operate the 327 Building, prior to the SAR revision.
INCREASED PERFORMANCE / BIO FOR 327 BUILDING	TRP-99-942										P.A. 2.3.1 Increased Performance - 100 percent of the incentive fee for this PA may be earned by the Contractor for completing the 327 Basis of Interim Operations document on or before September 30, 1999.

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Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
WASTE DRUM SHIPPING & DISPOSAL COMPLETE	TRP-02-923										At the time of turnover of the 327 Facility from Pacific Northwest Laboratories (PNNL), there were over 300 one gallon waste buckets stored within the facility hot cell. These buckets contain waste generated from past operations. They will be packaged fo
MET SAMPLE RETRIEVAL & REPACKAGING COMPLETE	TRP-03-922										The 327 Building has hundreds of fuel sample specimans from past research and development activities on fuel elements and materials from Hanford's production reactors that must be disposed of. The Legacy Material is in the form of metallurgical samples s
RADIOLOGICAL BASEMENT AREA DEACTIVATION COMPLETE	TRP-05-924										The 327 Facility Radiological Basement area includes the Cell Filter Room, the Basemenet Stroage Room and the Elevator Control Room. These areas must be deactivated to a point that will allow for routine access during the post deactivation surveillance pe
327 HOT CELLS & WASTER BASIN DEACTIVAION COMPLETE	TRP-06-926										The 327 Hot Cell consist of 10 cells which were used for irradiated fuel and component testing, examination and experimentation. The Water Basin has been used for storage of irradiated fuel elements and storage containers. These areas are highly contami
327 ION EXCHANGE COLUMN	TRP-04-925										The 327 ION Exchange Column was

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Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
DEACTIVATION COMPLETE											used to filter and purify the water with in the 327 Facility Waste Storage Basin and contains large amounts of contamination and soluble fission products. In order to support facility deactivation the resin within the colu
327 EXTERIOR AND YARD DEACTIVATION COMPLETE	TRP-07-927										The 327 Facility Exterior and Yard Area, includes the Cask Storage Pad, and the 327 Facility (located on the cask storage pad), the deactivation of the exterior and yard is part of an overall 327 Facility deactivation, intended to place the 327 Faciltiy i
327 ROOF & EQUIPMENT DEACTIVATION COMPLETE	TRP-07-928										Deactivating the 327 Building roof and equipment is part of an overall 327 Facility deactivation, intended to place the 327 Facility in a stable configuration requiring a minimum of services, surveillance, and maintenance while awaiting final Decontaninat
327 HVAC DEACTIVATION COMPLETE	TRP-07-929										The deactivation of the 327 Facility HVAC will include the deactivation of the Cold Side (non-radiological) portion of the system, this will include shutting down and isolating the utilities to the system equipment, removing and disposing of all hazardous
327 DEACTIVATION COMPLETE	TRP-07-930				Y	Y					Deactivate the 327 Facility to reduce potential hazards to personnel, the public, and the environment and

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Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
COMPLETE 324 REC DECONTAMINATION STRATEGY STUDY	TRP-99-940	Y									allows for a reduced level of surveillance during the extended surveillance period following deactivation. When fully deactivated, the work areas wi This study will propose a decontamination strategy for the various areas within the 324 REC. This will include documenttion of the decontamination evaluations conducted on various samples taken within the B-Cell. Decontamination solutions and supply syste
Begin 324/327 Facility Transition Project	PBS-97-023			Y							Administrative input to document the start of this PBS.

Performance Measure Metrics

Category/Subcategory	Units	1997-2006 Total	2007-2070 Total	1997-2070 Total	Actual Pre-1997	Planned 1997	Actual 1997	Planned 1998	Planned 1999	Planned 2000	Planned 2001	Planned 2002	Planned 2003	Planned 2004
Fac.														
Deact. During Per.	NF	5.00	1.00	6.00										
Tech.														
Deployed	Ntd	2.00	0.00	2.00						1.00	1.00			
Category/Subcategory	Units	Planned 2004	Planned 2005	Planned 2006	Planned 2007	Planned 2008	Planned 2009	Planned 2010	Planned 2011 - 2015	Planned 2016 - 2020	Planned 2021 - 2025	Planned 2026 - 2030	Planned 2031 - 2035	Planned 2036 - 2040
Fac.														
Deact. During Per.	NF			5.00	1.00									

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Category/Subcategory	Units	Planned 2004	Planned 2005	Planned 2006	Planned 2007	Planned 2008	Planned 2009	Planned 2010	Planned 2011 - 2015	Planned 2016 - 2020	Planned 2021 - 2025	Planned 2026 - 2030	Planned 2031 - 2035
Tech.													
Deployed	Ntd												
Category/Subcategory	Units	Planned 2036 - 2040	Planned 2041 - 2045	Planned 2046 - 2050	Planned 2051 - 2055	Planned 2056 - 2060	Planned 2061 - 2035	Planned 2066 - 2070	Exceptions	Lifecycle Total			
Fac.													
Deact. During Per.	NF								1.00	7.00			
Tech.													
Deployed	Ntd									2.00			

Technology Needs

Site Need Code: RL-DD011

Site Need Name: Structural Integrity Inspection - 324/327 Buildings Hot Cell Liners

Focus Area Work Package ID: DD-07

Focus Area Work Package: Hot Cell Facilities and Laboratory Equipment D&D

Focus Area: DDFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both):

Technologies

Interactive, Computer-Enhanced, Remote-Viewing System

Modified Light Duty Utility Arm (MLDUA)

Light Duty Utility Arm

Robotic End Effector for Inspection and Sampling of Storage Tanks

CDI Remote Characterization System

Cost Savings (in thousands of dollars)

Range of Estimate

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Technology Needs

Site Need Code: RL-DD05

Site Need Name: Characterization of Buildings 324 and 327

Focus Area Work Package ID: DD-07

Focus Area Work Package: Hot Cell Facilities and Laboratory Equipment D&D

Focus Area: DDFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both):

Technologies

Cost Savings (in thousands of dollars)

Range of Estimate

Internal Duct Characterization System

Small Pipe Characterization System (SPCS)

Pipe Explorer (TM) System

Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)

Gamma Ray Imaging System

Pipe Crawler Internal Piping Characterization System

Gamma Cam (TM) Radiation Imaging System

Indoor Radiation Mapping Using Laser Assisted Ranging and Data System

Segmented Gate System

CDI Remote Characterization System

Decommissioning In-Situ Plutonium Inventory Monitor (DISPIM)

Robotics Crawler

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Technology Needs

Site Need Code: RL-DD06

Site Need Name: Decontamination of Buildings 324 and 327

Focus Area Work Package ID: DD-07

Focus Area Work Package: Hot Cell Facilities and Laboratory Equipment D&D

Focus Area: DDFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both):

Technologies

Cost Savings (in thousands of dollars)

Range of Estimate

CORPEX Nuclear Decontamination Process

Soda Blasting Decontamination Process

Laser Decontamination and Recycle of Metals

Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT

2-D Linear Motion System

Steam Vacuum Cleaning

Rotary Peening with Captive Shot

Centrifugal Shot Blast System

Soft Media Blast Cleaning

ROTO PEEN Scaler and VAC PAC System

Concrete Shaver

Advanced Recyclable Media System

Remotely Operated Scabbling

Concrete Grinder

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Technology Needs

Site Need Code: RL-DD07

Site Need Name: Fixatives for Buildings 324 and 327

Focus Area Work Package ID: DD-07

Focus Area Work Package: Hot Cell Facilities and Laboratory Equipment D&D

Focus Area: DDFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both):

Technologies

Cost Savings (in thousands of dollars)

Range of Estimate

Reactor Surface Contamination Stabilization

Strippable Coatings and Fixatives

Site Need Code: RL-DD08

Site Need Name: Remote Cutting Technologies for Buildings 324 and 327

Focus Area Work Package ID: DD-07

Focus Area Work Package: Hot Cell Facilities and Laboratory Equipment D&D

Focus Area: DDFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both):

Technologies

Cost Savings (in thousands of dollars)

Range of Estimate

Laser Cutting and Size Reduction

High Speed Clamshell Pipe Cutter

Oxy-Gasoline Torch

Self Contained Pipe Cutting Shear

Track Mounted Shear/Crusher

Hand Held Shear

Innovative Size Reduction Nibblers

Innovative Size Reduction Shears

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Technology Needs

Site Need Code: RL-DD09

Site Need Name: Tank Remediation for Building 324

Focus Area Work Package ID: DD-07

Focus Area Work Package: Hot Cell Facilities and Laboratory Equipment D&D

Focus Area: DDFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both):

Technologies

Cost Savings (in thousands of dollars)

Range of Estimate

Modified Light Duty Utility Arm (MLDUA)

Houdini: Reconfigurable In Tank Mobile Robot

Confined Sluicing End Effector

Laser Cutting and Size Reduction

Oxy-Gasoline Torch

Houdini-II Remotely Operated Vehicle System

Site Need Code: RL-DD010

Site Need Name: Radiation Hardened Robotics for Building 324

Focus Area Work Package ID: DD-07

Focus Area Work Package: Hot Cell Facilities and Laboratory Equipment D&D

Focus Area: DDFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both):

Technologies

Cost Savings (in thousands of dollars)

Range of Estimate

Interactive, Computer-Enhanced, Remote-Viewing System

Three Dimensional, Integrated Characterization and Archiving System (3D-ICAS)

Houdini: Reconfigurable In Tank Mobile Robot

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Technology Needs

Intelligent Inspection and Survey Robot

Gamma Ray Imaging System

Mobile Robot Worksystem (ROSIE)

Gamma Cam (TM) Radiation Imaging System

Indoor Radiation Mapping Using Laser Assisted Ranging and Data System

Houdini-II Remotely Operated Vehicle System

Remotely Operated Scabbling

Remote Control Concrete Demolition System

Remote Underwater Characterization System (RUCS)

CDI Remote Characterization System

Track Mounted Shear/Crusher

Site Need Code: RL-DD046

Site Need Name: Clean-out of Isolated Piping Systems in Building 324

Focus Area Work Package ID: DD-07

Focus Area Work Package: Hot Cell Facilities and Laboratory Equipment D&D

Focus Area: DDFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both):

Technologies

Cost Savings (in thousands of dollars)

Range of Estimate

Liquid Membrane System for Removal and Concentration of Transuranic Elements

TRUEX/SREX

Removal of Contaminants from Equipment and Debris, and Waste Minimization Using TECHXTRACT

Portable Concentrator for Processing Plutonium Contaminated Solutions

Decontamination and Volume Reduction System (DVRS)

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Technology Needs

Site Need Code: RL-DD047

Site Need Name: Remote Viewing for Hot Cells in Buildings 324 and 327

Focus Area Work Package ID: DD-07

Focus Area Work Package: Hot Cell Facilities and Laboratory Equipment D&D

Focus Area: DDFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both):

Technologies

Interactive, Computer-Enhanced, Remote-Viewing System

Operator Interface for Robotic Applications

Cost Savings (in thousands of dollars)

Range of Estimate

Technology Deployments

<u>Deployment Status</u>	<u>Deployment Year</u>		
	<u>Planned</u>	<u>Forecast</u>	<u>Actual Date</u>
Technology Name: Indoor Radiation Mapping Using Laser Assisted Ranging and Data System			
Potential Deployment	2000		
Technology Name: Robotic Platform for B-Cell Cleanout			
Potential Deployment	2001		

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